Docket no. 13-116

Report to the Staff of the Delaware Public Service Commission Regarding the Appropriateness of Planned Infrastructure and Reliability-Related Investments by Delmarva Power & Light Company

Submitted By:

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I. Executive Summary

A. Introduction

On March 22, 2013, Delmarva Power & Light Company (Delmarva or the Company) filed a new electric base rate case with the Delaware Public Service Commission (Commission) in Docket 13-115, requesting a $42 million rate increase. In its filing, the Company unveiled its proposed five-year, $397 million distribution system capital spending plan.

Delmarva Delaware
Five Year Capital Spending Plan[1]

$ Millions	2013	2014	2015	2016	2017	Total
Customer	$12.1	$11.9	$12.1	$12.6	$13.0	$61.7
Reliability	71.4	58.9	59.2	60.3	59.2	309.1
Load	4.43	6.1	4.2	4.5	7.4	26.6
Total	**$87.8**	**$76.9**	**$75.7**	**$77.4**	**$79.6**	**$397.4**

Delmarva intends to spend approximately $309 million of the planned spending on reliability-related initiatives, including grid modernization, improvements in distribution system reliability, and replacing aging infrastructure that Delmarva claims is nearing the end of its useful life.

Staff and the Division of the Public Advocate (DPA) were concerned that Delmarva was leveraging the reliability problems of its affiliate in Maryland, Potomac Electric Power Company (Pepco), to accelerate reliability spending in Delaware. Thus, on April 16, 2013, Staff filed a motion requesting the Commission to open an investigation to examine Delmarva's proposed expenditures for reliability improvements over the course of the next several years. While Staff did not oppose reasonable investments to maintain adequate and reliable service, it considered the Company's proposed investments to be excessive in light of current reliability standards. Given the significant rate impact of such a capital spending program, Staff also argued for public forums in which customers could specifically question the need for the large increase in reliability investments.

In Order No. 8363 dated May 7, 2013, the Commission granted Staff's motion and opened Docket 13-152 to investigate two issues: the appropriateness of Delmarva's planned distribution infrastructure and reliability investments, and the need for modifications to the Electric Service Reliability and Quality Standards (Standards) in Regulation Docket No. 50. The Commission stated that it would consider whether the existing reliability standards should be revised to include new or adjusted metrics to help measure reliability performance related to distribution infrastructure and reliability investments, and would further consider when and if such investment is consistent with Delmarva customers' reliability needs and the ability of those customers to pay for such investment. The Commission also ordered Delmarva to hold public comment sessions in each county to receive comments from customers about service reliability and Delmarva's proposed infrastructure and reliability improvements.

[1] Direct Testimony of Michael Maxwell in Docket 13-115, p. 5.

Staff selected Silverpoint Consulting LLC (Silverpoint) to assist it in its investigation. Staff asked Silverpoint to:

- Analyze and evaluate Delmarva's current reliability performance;
- Assess the adequacy of current Delaware reliability standards and recommend changes, if needed;
- Analyze and evaluate Delmarva's past and planned distribution system infrastructure projects;
- Determine the appropriate level of reliability performance and the level of planned investment necessary to achieve that reliability; and
- Assist Staff in assessing the impact of the planned level of investments on Delmarva ratepayers.

B. Major Conclusions and Recommendations

In this section of the report, Silverpoint provides an overview of major conclusions and recommendations arising from its investigation.

Delmarva's five-year plan will have a significant impact on customers.
The Company projected that its $397 million distribution system capital spending plan would increase the typical residential customer's bill by approximately $11.34 per month, which represents 29% of the distribution-only bill and 8% of the total bill. Approximately 78% of Delmarva's proposed expenditures are devoted to reliability-related investments, so the impact of the reliability-related investments alone on a typical residential customer's bill would be approximately $8.85 per month.

Regulation Docket No. 50 Standards should be updated and revised.
In 2006, the Standards established Delmarva's "everyday" reliability standard at a maximum System Average Interruption Duration Index (SAIDI) of 295 minutes.[2] Since that time, the Company's performance has improved to such an extent that it is now outperforming the requirement by over 50 percent. Even so, the Company plans significant capital investments to improve its SAIDI performance still further.

Performance standards should send a clear signal to the utility about what its regulators consider to be adequate and reliable service; they should also serve as a framework for consideration of reliability-related capital investments. To that end, Silverpoint recommends that the Commission revise the yearly SAIDI maximum of 295 minutes to a maximum two-year average SAIDI of 200 minutes. A SAIDI standard of 200 will guarantee that ratepayers receive respectable reliability performance. It will also make clear that capital projects designed merely to reduce Delmarva's SAIDI metric are inconsistent with investment priorities the Commission has determined to be in the best interest of ratepayers.[3]

[2] "Everyday" SAIDI reflects the system's reliability under both blue sky conditions and during minor storms, but excludes the effects of major outage events.
[3] Order No. 8363 implies that the Standards might be amended in order to indicate the level of investment consistent with Delmarva customers' reliability needs and the ability of those customers to pay for such investment. We

Reliability standards in most states include both duration and frequency measures. Silverpoint believes the current Standards should therefore be expanded at this time to include the System Average Interruption Frequency Index (SAIFI) metric. We recommend a maximum two-year average SAIFI of 1.60.

Delmarva's five-year plan mistakenly emphasizes short-term SAIDI improvements.

Delmarva's five year plan contains $87 million in feeder-related projects that target improvement beyond what is required under the current worst performing feeder program. Although these projects will offer some limited benefit in terms of system hardening, the Company acknowledges that its primary reason for pursuing them is to reduce its SAIDI metric.

Delmarva's discretionary capital spending should be focused on modernizing the grid and replacing aging infrastructure to ensure system reliability for the mid- to long term. From the customer's perspective, these objectives are much more important than short-term SAIDI improvements. It is important to remember that short-term reliability is heavily dependent on how well a distribution system has been maintained. As long as Delmarva's operations and maintenance (O&M) budgets include adequate amounts for system maintenance, including vegetation management, it will not have to expend significant capital in order to maintain its reliability performance.

Delmarva cannot justify the need for an accelerated aging infrastructure replacement program.

Delmarva's five year plan contains nearly $58 million in aging infrastructure replacement projects aimed at improving long-term system reliability. Most of these projects involve URD cable or substation components such as switchgear and breakers. Based on our review of the Company's asset data and engineering studies, Delmarva's aging asset problem is similar to most utilities and not one that requires extraordinary measures to address. It is important to remember that replacement of aging infrastructure is a long-term issue, which can be dealt with using a long-term approach that will help mitigate the impact on customer rates.

Delmarva's five-year reliability-related capital spending plan should be revised to better match the priorities and best interests of its customers.

The following chart compares Delmarva's proposed reliability-related capital additions in its five year plan with those recommended by Silverpoint based on its investigation.[4]

Five Year Total Reliability-related Capital Additions by Category

$ Millions	**Delmarva**	**Silverpoint**	**Difference**
Short-Term Sustaining	$148.3	$150.0	$(1.7)
Grid Modernization	33.8	20.0	13.8
Metric Improvement	86.9	0	86.9
Long-Term Sustaining	57.6	30.0	27.6
Total	**$326.6**	**$200.0**	**$126.6**

believe that reliability standards by themselves cannot clearly delineate when and if particular capital investments are appropriate or cost-effective. We therefore recommend that such issues be dealt with in procedural dockets or as part of an ongoing collaborative process.

[4] These figures are stated in terms of capital additions rather than capital expenditures.

Silverpoint concurs with the Company's estimate of the amount of short-term sustaining capital needed to keep the system operational, which is approximately $30 million per year over the five-year period. We consider such spending to be non-discretionary and of the highest priority. However, none of the Company's $87 million in metric improvement projects are in the best interest of ratepayers at this time. Replacing aging infrastructure and investing in grid modernization are both in the ratepayers' best long-term interest, but we found no support for Delmarva's pace of spending on those programs. A more modest investment in these initiatives each year will adequately serve customers' needs. Silverpoint's recommended five-year capital budget of $200 million would reduce the impact on Delmarva's customer bills by nearly 50%.

II. Summary of Public Sessions and Silverpoint's Investigative Approach

A. Public Sessions

Delmarva held public comment sessions in Dover, Georgetown, and Wilmington over a three-week period in September and October 2013. During its formal presentations, the Company cited various industry reports that underscored the need for electric utilities nationwide to upgrade and modernize their grids.[5] Delmarva pointed out that its current reliability performance placed it in the third quartile compared to other utilities participating in a national survey.[6] Management also emphasized that other utilities are, on average, improving their reliability performance by about 15% per year. Delmarva's reliability improvement plan, which was reportedly designed to keep pace with the industry, specifically targets three areas: grid resiliency, grid modernization, and aging infrastructure.

Delmarva stated that its investments in grid resiliency would be aimed at improvements in (a) system hardening and outage prevention, which would make the electrical infrastructure better able to withstand stresses of storms, and (b) outage recovery, allowing Delmarva to more quickly restore service. Grid modernization would involve investments in automation, information, and communication technology to keep the distribution system current and provide value to customers. Its investments in replacing aging infrastructure would be aimed at preventing deterioration of its reliability performance over the mid- to long term. Delmarva stated that aging infrastructure is a critical issue, since equipment failure rates can increase as equipment nears the end of its useful life. It cited as symptoms of aging infrastructure (a) system design and/or equipment more than forty years old, (b) performance that is beginning to degrade, (c) above-average equipment failure rates, (d) high labor overtime due to unscheduled repair and restoration, and (e) major interruption events frequently coinciding with cascading outages.

According to the Company, its research indicated that more severe storms are becoming the "new normal," and that customers are concerned about maintaining reliability given increasing dependence on electricity in their everyday lives. Delmarva believed it had adequately balanced the need for future investments with the impact to its customers. The Company projected the impact of its planned capital investments of $397 million at approximately $11.34 per month for a typical residential customer, which represents 8% of the total bill and 29% of the distribution-only bill.[7]

Staff and Silverpoint attended the three Delmarva public forums and also made a presentation reviewing the pros and cons of increased investments in reliability. On the positive side, Staff pointed to potential reductions in the number and duration of outages, which would in turn reduce the inconvenience and economic losses by customers during those power outages. On the negative side, Staff presented Delmarva reliability information showing that the Company had improved its distribution reliability performance over the past three years to approximately 50%

[5] For example, the Company cited the report by the American Society of Civil Engineers, "2013 Report Card for America's Infrastructure."
[6] Institute of Electrical and Electronics Engineers (I.E.E.E.) Annual Reliability Survey.
[7] Staff's estimate is similar to that of Delmarva.

better than the Standard with a SAIDI of 146 minutes. Staff further pointed out that Delmarva's planned investments to continue improving reliability will increase the average residential consumer's rates by $11.36 by 2017, and that its plan proffered no means to determine whether the proposed investments would actually benefit customers.

Turnout for the three public sessions was relatively small. At the Dover session, those offering comments included contractors that work for Delmarva as well as representatives from emergency management and the business sector. All emphasized the importance of maintaining or improving system reliability. There were no comments from residential customers. At the Georgetown session, several attendees spoke, including a representative from AARP. Public comments at this meeting focused on the hardships imposed by increasing rates, and the need for better communication from Delmarva about how its initiatives will impact customers.

Overall, the residential customers who provided comments at the Wilmington session were generally satisfied with the current level of Delmarva's reliability, but felt that the current economic environment makes it difficult for them to pay for expensive system improvements. Some commenters emphasized that they did not want to see degradation in reliability or in the speed of restoration after major storm events. Others stated that they did not want to pay for reliability that benefitted others more than themselves, noting that the perceived benefit of avoiding an eight-hour outage for a residential customer is very low compared to that for a commercial or industrial customer.

At the Wilmington session, Representative Kowalko stated that his constituents were not in a position to absorb more costs given the current economic circumstances.[8] Several businesses emphasized their need for extremely reliable service and supported Delmarva's plans for improved reliability, but made no comment about cost. Mr. Mark Kleinschmidt, President of New Castle County Chamber of Commerce, was supportive of Delmarva's plans, stating that reliability is critical to individual business interests but even more so to the Delaware economy, which competes with other states.[9]

Throughout the public sessions, it appeared that both business and residential customers could not always distinguish between their concerns about "blue sky" reliability and "major storm" reliability. Blue sky reliability refers to the system dependability that customers experience during normal daily weather conditions or minor weather events, and which is reflected in typical SAIDI and SAIFI performance measures. Major storm reliability reflects resiliency, or the ability of the distribution system to withstand damage (*i.e.*, avoid customer outages) during major weather events; it is measured separately and not reported in standard SAIDI and SAIFI performance measures.[10]

[8] Transcript, Public Comment Session, October 16, 2013, Page 257, Line 16-19.
[9] Ibid, Page 302-303, Lines 12-24, 1-14.
[10] Delmarva pointed out in the public comment sessions that infrastructure investment can have a favorable impact on both blue sky reliability and system resiliency. New investment can improve blue sky reliability and can also harden the system to withstand major storms and shorten outage times.

B. Silverpoint's Approach to the Investigation

Early in the process, Staff and Delmarva agreed to a less formal approach for this investigation. Since Silverpoint could utilize material previously provided by Delmarva as part of the discovery process in the rate case, it agreed to forgo written discovery requests in this docket. Silverpoint subsequently requested several informal, yet structured, day-long working sessions with Company personnel, and provided detailed agendas beforehand to ensure that the appropriate Delmarva personnel would be present at each meeting.

In the first full working session, Silverpoint met with Delmarva operations, restoration, and asset management personnel. The objective for this meeting was to learn more about the characteristics of each electric distribution process—planning, design, construction, operations, and maintenance—and how they varied across Delmarva's service areas within the state. During this time, the Silverpoint team became more familiar with the system, reviewing geographically-oriented maps and diagrams of typical distribution circuits. We also examined historical outage cause data in order to better understand system vulnerabilities. We discussed with the Company its planning and design criteria, its transmission and distribution studies, and its standards and requirements for system maintenance, including vegetation management. Silverpoint also discussed the Company's approach to asset management and its criteria for determining the timing of replacements for overhead, underground, and substation system components.

Silverpoint analyzed information about Delmarva's prior reliability-related capital projects as well as those it proposed in its five year plan. We grouped projects into categories of similar work *(e.g.*, feeder work, pole replacement, automation) in order to better understand the Company's pattern of past spending. At our second working session, we reviewed this analysis with Company personnel knowledgeable about reliability-related capital projects as well as system reliability and outage analysis. Our primary objective for this meeting was to better understand distribution system projects from the 2007 to 2012 period, such as how they were selected and whether they were designed to maintain the current level of reliability or to enhance it. The results of this meeting helped to inform our trend analysis.

In the next step of our evaluation, Silverpoint assessed whether past and future capital projects were aimed toward (a) sustaining current levels of reliability over the short term, (b) improving reported reliability metrics, (c) modernizing the system, or (d) helping to sustain system reliability over the longer term through, for example, replacement of aging infrastructure. At our third working session, we explored the Company's rationale for future spending levels and reviewed the data and engineering analyses it offered to support them. The results of this meeting helped us to define spending priorities and to develop a reasonable estimate of baseline capital spending needed to maintain an appropriate level of reliability. After the team developed its preliminary recommendations, Silverpoint requested that Delmarva prepare two alternative five-year capital plans assuming a target SAIDI of 175 and 200, rather than its more aggressive target. We considered the Company's scenarios, but they ultimately had no effect on our final conclusions and recommendations.

In Section III of this report, we discuss in more detail our analysis of the existing Standards and Delmarva's current reliability performance; we also offer our recommendations regarding the appropriate level of reliability performance and the corresponding modifications to the

Standards. In Section IV, we discuss our analysis of Delmarva's prior and proposed levels of reliability-related capital investments; we also present our recommendations regarding the level of investment necessary to achieve an appropriate level of reliability performance.

III. Reliability Standards and Performance

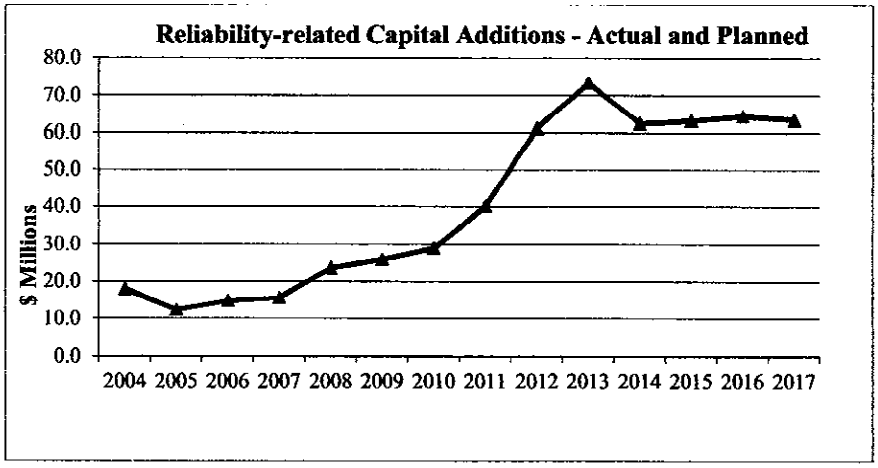
A. Current Reliability Standards and Delmarva's Recent Performance

The Standards set Delmarva's reliability standard at a maximum SAIDI of 295 minutes, exclusive of major event days. It is quite clear from Delmarva's performance, as measured by SAIDI as well as SAIFI, that it never had any difficulty satisfying that standard.

Delmarva Delaware Reliability Performance 2003-2012[11]

	SAIDI	SAIDI Standard	SAIFI
2003	237	-	2.87
2004	245	-	1.61
2005	169	-	1.51
2006	234	295	1.63
2007	197	295	1.60
2008	213	295	1.47
2009	190	295	1.35
2010	199	295	1.47
2011	192	295	1.41
2012	146	295	1.14

In fact, the Company's performance has been steadily improving to such an extent that by 2012 it was outperforming the SAIDI requirement by over 50 percent. Within four years of the Standards being in place, Delmarva more than doubled its pace of spending on reliability-related initiatives. That spending has recently become a runaway train, as Delmarva again doubled its spending despite having far surpassed the SAIDI standard.[12]



[11] Data from Delmarva Delaware Capital Distribution Construction Plan 2014-2018, dated December 18, 2013.

[12] Under the Company's Reliability Enhancement Plans, it expects to invest equal amounts in supplemental reliability projects over the 2013 to 2017 period, approximately $170 million, in both Maryland and Delaware, despite vastly different standards and requirements for improvement. [Docket No. 13-115, Vavro Direct Testimony, p. 8.]

Performance standards should clearly signal what a commission considers to be adequate and reliable service. They should also serve as a framework for regulators and utilities to ultimately arrive at the level and type of infrastructure investment necessary to maintain that level of service. The current Standards do neither.

The Standards may have originally been adequate, but regulatory paradigms have been changing in recent years. The language in §1.3 of the Standards reflects the then-common concern among regulators about underspending, noting that compliance "does not create a presumption of safe, adequate and proper service," and that "nothing in this regulation relieves any utility from the requirement to furnish safe, adequate and proper service." Clearly, this was a warning to utilities not to merely squeak by the standard nor shirk their responsibility to ensure systems are properly maintained.

We have in a sense fallen through the looking glass—utilities such as Delmarva now look for opportunities to spend money on capital projects, when in the past they made excuses to *not* spend it. For at least two decades, commissions were concerned with ensuring that utilities did not neglect their regulated businesses. Utilities had a tendency to underinvest in the distribution system, which was typically lowest in priority when corporate capital was limited. Many utilities now want to grow their distribution system rate base as a means to boost earnings. This turnabout in attitude was evident in Delmarva's arguments in the rate case, as it argued for unfettered discretion to expand rate base at will and set its own reliability goals.

B. Recommended Changes to Reliability Standards

Specific revisions to the Standards are necessary to better convey the Commission's expectations about Delmarva's reliability performance. In setting thresholds for performance metrics, regulators should remain sensitive to customers' ability to pay to maintain such performance. It is unrealistic, however, to expect that reliability standards in and of themselves can clearly delineate if and when a particular level of capital investment is appropriate or whether customers can afford it. The answers to those questions are never static, and should be dealt with in procedural dockets or as part of an ongoing collaborative process such as the one we discuss in more detail in the next section.

Given where Delmarva is today, a SAIDI of 146, the existing SAIDI maximum standard of 295 minutes is no longer relevant.[13] A good portion of the capital that Delmarva spent to achieve its current level of performance has already been added to plant in service and customers are, or will soon be, paying for it in rates.[14] Customers should therefore receive a concrete benefit from those investments through higher guarantees of reliability performance. The question is, to what level?

[13] In our recent discussions with Delmarva personnel, they indicated that the Company expects its 2013 year-end SAIDI to be the same as 2012.

[14] For example, Delmarva had nearly $40 million in plant additions in 2011 and 2012 under its Reliability Enhancement Plan. [Docket No. 13-115, Vavro Direct Testimony, p. 9.]

During its investigation, Silverpoint considered two alternative maximum SAIDI standards – 175 minutes and 200 minutes – and a good argument for setting a new standard at either level can be made. We believe Delmarva can comfortably comply with a maximum of either 200 minutes or 175 minutes without any new capital investment specifically aimed at lowering SAIDI (*e.g.*, feeder reliability improvement projects) over the next five to seven years.[15] Regardless of which level is in place, we would not expect much if any erosion in the Company's current SAIDI performance in the near future.

We believe that adopting a maximum SAIDI of 200 minutes is more appropriate at this time. It sends a clear signal that the Commission does not support the spending surge unilaterally undertaken by Delmarva in 2011 to drive down its SAIDI level. Revising the Standards to reflect a SAIDI maximum of 200 also underscores the fact that neither the Commission nor ratepayers were unhappy with Delmarva's reliability in the 2009 to 2011 period, when the Company was performing at that level. It should be made explicit to the Company that there never was a mandate for Delmarva to march towards the SAIDI levels in place today.

This does not mean that Delmarva should specifically target an erosion of its current SAIDI level of performance to more closely mirror a revised standard. However, it is important to allow room for that performance to degrade temporarily, if necessary, in order to stay the course with any agreed-upon plan for distribution system infrastructure investments over the next several years. In a similar vein, the new SAIDI standard should be based on a two-year average. That way, the Company will not have grounds to argue for the need to maintain a sufficiently-large cushion in any given year, as there would be ample time for any necessary course correction. It is also important to provide Delmarva with some certainty that these standards will not suddenly change, so that it can concentrate on infrastructure priorities that the Commission ultimately supports. We therefore suggest that the Standards explicitly state that the revisions will remain in place until at least the year 2020, at which time they could be re-examined and either extended or further adjusted.[16]

Reliability standards in most other states typically reflect both duration and frequency measures, and we consider it appropriate to add a frequency index, specifically SAIFI, in the revised Standards. We believe a maximum two-year average SAIFI of 1.60 would be consistent with the Company's performance in the 2009 to 2011 period while allowing some room for variations that could occur as the Company's infrastructure investment priorities change.

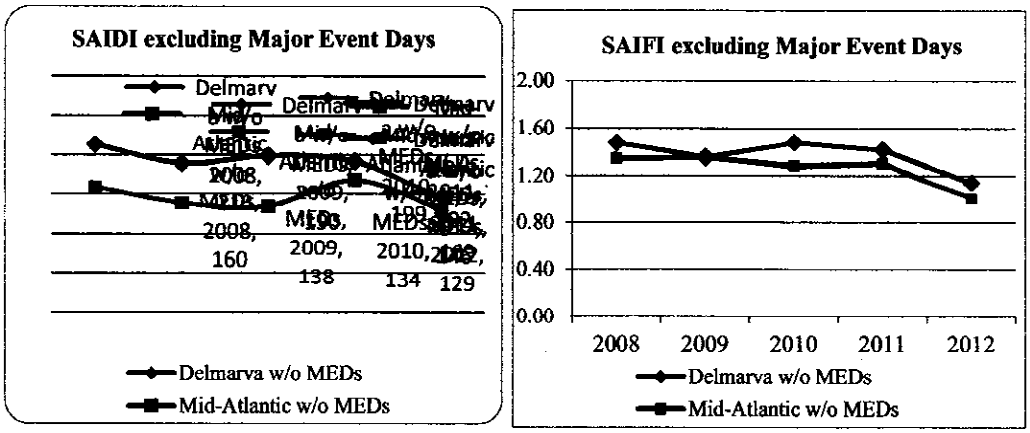
Delmarva's current reliability performance, along with any revised Standards, has to be viewed in the proper perspective. The Company has emphasized that its current performance, when compared to a surveyed national panel of utilities, falls in the middle of the third quartile.[17] Comparing its performance to a subset of that panel, specifically utilities located in the Mid-Atlantic region, is actually more meaningful. The following charts, developed using data that

[15] We recognize the need for some level of spending to meet the requirements of the worst performing feeder program, but consider this amount part of yearly sustaining capital.

[16] This is similar to the treatment in Maryland, where SAIFI and SAIDI benchmarks continue to ratchet downwards until 2015, where they will remain unless changed by regulators.

[17] Delmarva cited the 2012 I.E.E.E. Annual Reliability Survey in its Post-Hearing Opening Brief in Docket 13-115.

Delmarva provided, illustrate the Company's SAIDI and SAIFI levels compared to median performance by a panel of Mid-Atlantic utilities.[18]



As the charts highlight, Delmarva is currently in the middle of the pack in terms of both SAIDI and SAIFI, performing on a par with the median utility in the Mid-Atlantic group. The Company has also stressed that the current SAIDI standard maximum of 295 minutes translates into fourth quartile performance (as would a SAIDI maximum of 200 minutes) when viewed nationally. We do not have access to raw survey data, but surmise that from a Mid-Atlantic utility perspective, the revised Standards would represent respectable performance.

The Commission and Delmarva should make ratepayers aware that the revised Standards are being designed as a backstop measure to ensure that the utility continues to provide a respectable level of reliability while at the same time allowing it some leeway as it embarks on a program of more sizable infrastructure investments over the next several years. Rather than setting more aggressive reliability targets, customers will benefit more from a focus on programs (*e.g.*, grid modernization and replacement of aging infrastructure) aimed at preserving reliability levels for the longer term rather than on short-term improvements.

Furthermore, performance standards should not be static, but rather should be reviewed periodically for continued relevance and usefulness. It may be beneficial to expand the metrics to include those that are more customer-focused, but for now we believe the SAIDI and SAIFI measures are adequate.

We do not recommend including a Customer Average Interruption Duration Index (CAIDI) metric at this time. As illustrated in the chart below, Delmarva's CAIDI performance is currently in line with that of a median Mid-Atlantic utility. CAIDI is derived from other measures, and in and of itself is not necessarily useful for infrastructure investment decision-making.[19]

[18] Data provided by Delmarva in its responses to PSC-CP-6 and PSC-REL-23; these data correspond to the Mid-Atlantic utilities included in the I.E.E.E survey.

[19] CAIDI is less an indicator of system reliability than one of restoration efficiency. It is a useful tool for evaluating the response to actual outages by operations personnel.

Trends in CAIDI Performance

	Delmarva Delaware			Mid Atlantic Median		
	SAIDI	SAIFI	CAIDI	SAIDI	SAIFI	CAIDI
2007	197	1.60	123			
2008	213	1.47	145	160	1.34	119
2009	190	1.35	141	138	1.35	102
2010	199	1.47	135	134	1.28	105
2011	192	1.41	136	169	1.30	130
2012	146	1.14	128	129	1.00	129

Focusing on CAIDI at this time may in fact be counterproductive, potentially creating confusion or conflicting priorities. For example, during a period in which a utility is making significant investments in distribution automation, CAIDI would tend to increase. On one hand, by automating a switch, a utility could eliminate an outage that would otherwise require it to dispatch a crew to manually reset in the field (thereby improving SAIFI). On the other hand, such outages tend to be relatively short, and eliminating a significant number of them could increase average outage duration for the remaining customers that experience them. Until the parties more fully understand the effect of certain investment priorities on measures like CAIDI, it is premature to set a definite standard.

In summary, we believe that revising the current Standards to reflect a maximum two-year average SAIDI of 200 minutes and a maximum two-year average SAIFI of 1.60, to remain unchanged for at least the next five years, is a necessary part of establishing the framework and context for the infrastructure investment decision-making we discuss next.

IV. Distribution System Reliability-Related Infrastructure Investment

A. Analysis of Historic and Planned Reliability-Related Capital Projects

In Docket No. 13-115, Delmarva introduced a five-year distribution capital spending plan for the years 2013 to 2017, which is summarized in the table below.[20]

Delmarva Delaware Five-Year Capital Spending Plan

$ Millions	2013	2014	2015	2016	2017	Total
Customer	$12.1	$11.9	$12.1	$12.6	$13.0	$61.7
Reliability	71.4	58.9	59.2	60.3	59.2	309.1
Load	4.43	6.1	4.2	4.5	7.4	26.6
Total	**$87.8**	**$76.9**	**$75.7**	**$77.4**	**$79.6**	**$397.4**

The Company categorizes capital projects as being driven by customers, load, or reliability. Customer-driven capital projects are those required by customers (*e.g.*, new connections) or by government agencies (*e.g.*, relocating plant for highway construction). Load-driven projects are designed to maintain load transfer and system continuity (*e.g.*, adding substation capacity). Projects that fit in neither of those two categories are reliability-related, and are designed to either maintain or enhance distribution system reliability. Examples of reliability-related capital projects include underground residential distribution (URD) cable replacement, feeder improvements, and distribution automation.

During discovery in the rate case, Delmarva provided considerable information about the projects and initiatives that make up its five-year plan. The most complete and detailed project-level information, and therefore the most useful to us in our investigation, was stated in terms of plant additions, as opposed to capital expenditures. Total plant additions anticipated under Delmarva's five year plan are shown in the following table.[21] Our analysis was focused on the planned reliability capital additions of $326.6 million.

Delmarva Delaware Planned Five Year Capital Additions

$ Millions	2013	2014	2015	2016	2017	Total
Customer	$12.1	$11.9	$12.2	$12.6	$13.0	$61.7
Reliability	73.4	62.3	63.2	64.3	63.4	326.6
Load	4.8	6.1	4.3	4.5	7.4	27.2
Total	**$90.3**	**$80.3**	**$79.6**	**$81.4**	**$83.8**	**$415.5**

All dollar figures in the balance of our discussion refer to plant additions.[22]

[20] Direct Testimony of Michael Maxwell in Docket 13-115, p. 5.

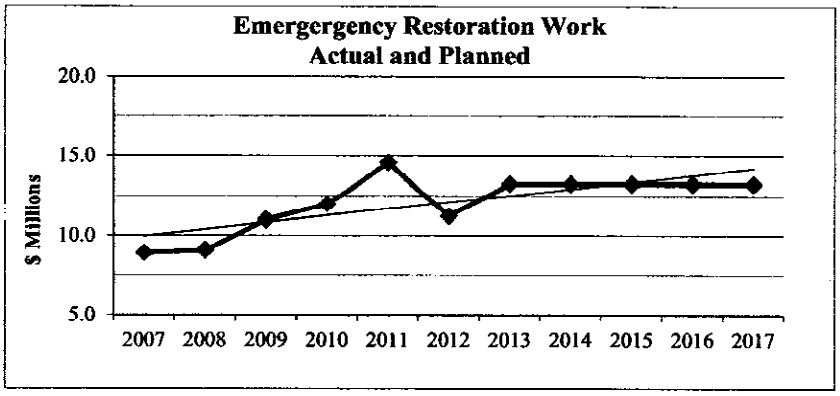
[21] Data from Delmarva's responses to AG-REL-2 and AG-GEN-1 Attachment D. Silverpoint cannot reconcile the $309.1 million reliability-related capital expenditure figure with the $326.6 million reliability-related plant additions figure. We expect that some of the differential could be due to accounting timing issues, since capital expenditures are not always closed to plant in service in the year they are spent.

[22] Our investigation focused on reliability-related investments, and we have taken no position on the appropriateness of Delmarva's capital requirements for customer-driven or load-driven projects.

It is important to understand the nature of the work that Delmarva recently performed on its distribution system so that one can compare and contrast it with the Company's proposed future plans. Delmarva provided itemized lists of the projects included in capital additions for the six-year period (2007 to 2012) immediately preceding the five-year plan, as well as the projects included in the plan itself.[23] Over 200 projects were represented in the eleven years of data, but the information was not presented in a fashion that lent itself to useful analysis. Also, for 2011 onward, the Company had differentiated between Reliability Enhancement Plan (REP) projects and non-REP projects; we found the Company's basis for this designation ambiguous, and we eliminated that distinction quite early on.[24]

Silverpoint grouped the capital projects into categories of similar work, such as emergency restoration, underground facilities, feeder work, and pole replacement, with the largest category of projects being substation-related work. We reviewed and discussed this analysis at some length with Company personnel, making adjustments as needed.[25] This capital project grouping analysis is included in Appendix 1.

Some replacement of existing distribution system infrastructure is part of normal utility operations. A utility must perform certain categories of capital work (such as emergency restoration) to keep the system up and running. In that sense, then, these capital additions are non-discretionary, and work of this type will be required every year. Although the amount can vary each year, the level is relatively predictable and stable. Our trend analysis of emergency restoration work, for example, indicates that this category of capital addition can be expected to grow at an average rate of roughly four percent per year.



Other categories of capital projects needed as part of normal operations include emergency substation work, as well as routine replacement of poles and pole top transformers, deteriorated URD cable, pad mount transformers, and substation batteries and their associated charging

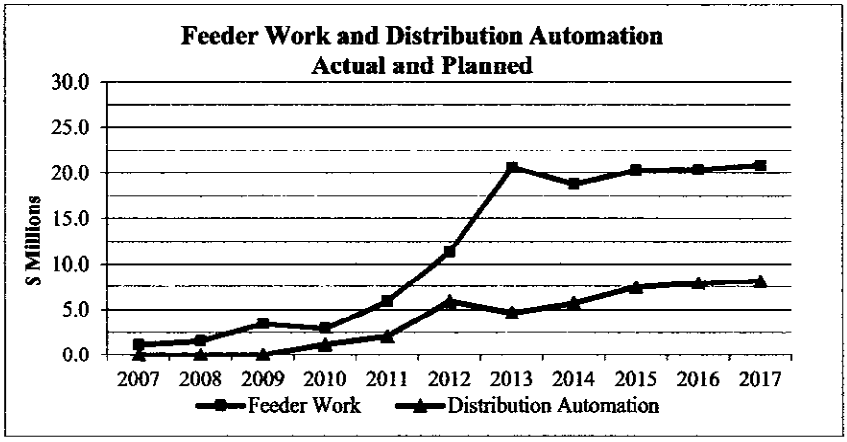
[23] Historical project information was provided by Delmarva in responses to AG-REL-3 Attachment A and Attachment B in Docket No. 13-115. Information regarding 2013-2017 projects was provided by Delmarva in responses to AG-REL-2 Attachment and AG-GEN-1 Attachment D in Docket No. 13-115. A copy of the relevant project information is included in the Supporting Documents accompanying this report.

[24] Background information on Delmarva's Delaware and Maryland REPs from Vavro Direct Testimony in 13-115.

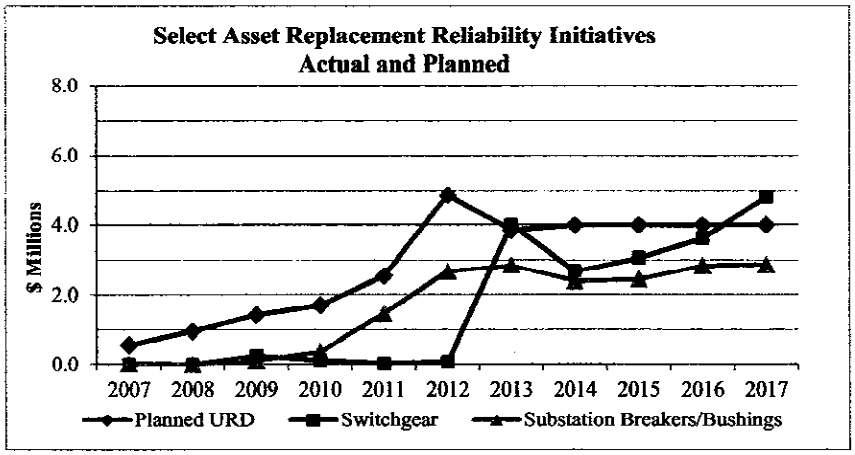
[25] Delmarva personnel noted that they had not looked at their projects in this way before.

equipment. These projects are also non-discretionary, and have a growth rate similar to that of emergency restoration work. Some of these capital additions are for assets that are essentially run until failure, *i.e.*, pole top transformers.

On the opposite end of the spectrum are Delmarva's feeder and distribution automation projects. As is evident from the graph below, the Company began major new initiatives in these areas in 2011, with a noticeable surge in spending planned for the 2013 to 2017 period. While some amount of capital work in these two categories is necessary, such as the worst performing feeder improvements required by the Standards, most of the spending from 2011 onward is not required to maintain the distribution system at its current level of reliability. In that sense, we consider it to be discretionary spending. The tremendous ten-fold growth in feeder reliability work is indicative of the "pedal-to-the-metal" attitude that permeates Delmarva's five-year plan in general.



Certain categories of assets are the subject of more sophisticated asset replacement planning at Delmarva. Examples include planned URD cable, substation switchgear, and substation circuit breakers and bushings. While Delmarva's capital additions in these assets for the 2007 to 2011 period were relatively modest, ranging from $1 to 4 million per year, they were adequate to prevent any erosion in its reliability performance. In its five-year plan, however, Delmarva significantly speeds up its replacement efforts for these assets, with spending reaching a rate of $12 million per year by 2017.



There is little question that the electric utility industry as a whole is wrestling with the issue of aging infrastructure. Many electric distribution systems were expanded substantially in the 1960s and 1970s, and much of that equipment is nearing the end of its useful life. Utilities like Delmarva are experiencing a "baby boomer" effect on their distribution system based on asset age demographics. Realistically speaking, replacement of that infrastructure will produce a bulge in capital budgets for a number of years.

According to Delmarva personnel, the Company recently developed a deeper sense of urgency about attacking the problem of aging infrastructure, and the Company's five-year plan clearly reflects a significant increase in spending in these areas. As with the feeder work, some capital projects of this type are undoubtedly necessary to maintain the distribution system at its current level of reliability, but to the extent that the work is being rushed, we consider a portion of those capital additions to be discretionary.

As the next step in our evaluation of Delmarva's five-year plan, Silverpoint separated the capital projects into four broad categories:[26]

- Short-Term Sustaining – capital projects needed to keep the system operational and to maintain current reliability levels for the short term;
- Reliability Metric Improvement – initiatives designed primarily to improve the Company's reported reliability measures;
- Grid Modernization – initiatives such as distribution automation that, while improving reliability, have corollary benefits such as synergies with advanced metering initiatives (AMI) or cost reduction; and
- Long-Term Sustaining – initiatives such as aging infrastructure replacement designed to ensure that current levels of reliability can be maintained over the mid- to longer term.

A copy of our category analysis for the 2007 to 2017 period is included in Appendix 2.

[26] In certain instances, project groupings are split among two categories. For example, for feeder work, we assumed approximately $1 million per year was required for the priority feeder work required by the Standards and included it in short-term sustaining; we included the balance in reliability metric improvement.

The following table summarizes the total dollar value of capital additions in Delmarva's five-year plan in each category.

Delmarva Five Year Plan Capital Additions by Category

$ Millions	2013	2014	2015	2016	2017	Total
Short-term Sustaining	$39.8	31.3	$27.0	$26.6	$23.6	$148.3
Grid Modernization	4.7	5.7	7.4	7.9	8.1	33.8
Metric Improvement	16.1	15.9	18.1	18.2	18.6	86.9
Long-term Sustaining	12.8	9.4	10.7	11.7	13.0	57.6
Total	**$73.4**	**$62.3**	**$63.2**	**$64.3**	**$63.4**	**$326.6**

During its investigation, Silverpoint considered the adequacy of the Company's justification for the level of capital additions in each category. We should make clear at the outset that we did not find any of the Company's initiatives to be frivolous or not potentially worthwhile to pursue at some point in the future. The issue, quite simply, is that customers should not be asked, nor can they likely afford, to pay for the system to which Delmarva aspires under its proposed five-year plan.

Although it will entail an economic hardship for ratepayers, we nonetheless believe it is important to move forward with an increased level of system investment, albeit at a more measured pace. One of the toughest challenges in this investigation was setting reasonable priorities for infrastructure and reliability-related investment given the economic realities Delmarva's customers face. In terms of protecting ratepayer interests, however, the Commission has to be the ultimate arbiter. Providing adequate service to customers at a reasonable price requires a partnership between Delmarva and its regulators, and as partners, both are ultimately responsible for the quality of service. To that end, a more hands-on collaborative approach to infrastructure and reliability-related investment is needed.[27]

B. Recommended Level of Reliability-Related Capital Additions

The table below summarizes Silverpoint's recommended capital additions over the next five-year period, consistent with its recommended revised Standards for SAIDI and SAIFI.[28]

[27] We understand that a collaborative process regarding future reliability-related investments was agreed to in the prior rate case. Delmarva could have begun a conversation with the Commission two years ago before embarking on its REP initiative, but it did not. That said, we believe the only reasonable way forward given the dollars at stake is a process that eliminates the need to argue over the necessity or usefulness of infrastructure investments in future proceedings.

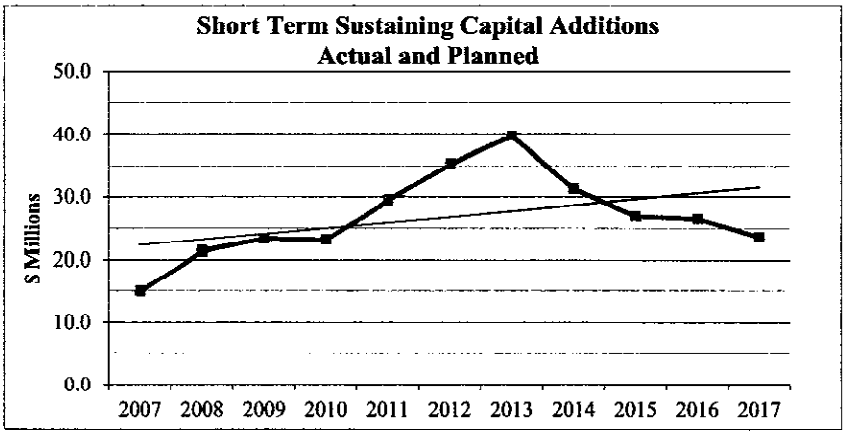
[28] Late in the process, Delmarva provided to us its 2014-2018 distribution construction plan that essentially continues the initiatives from its earlier plan into 2018. Our recommended levels are therefore applicable on a going-forward basis.

Silverpoint Recommendation
Five Year Plan Capital Additions by Category

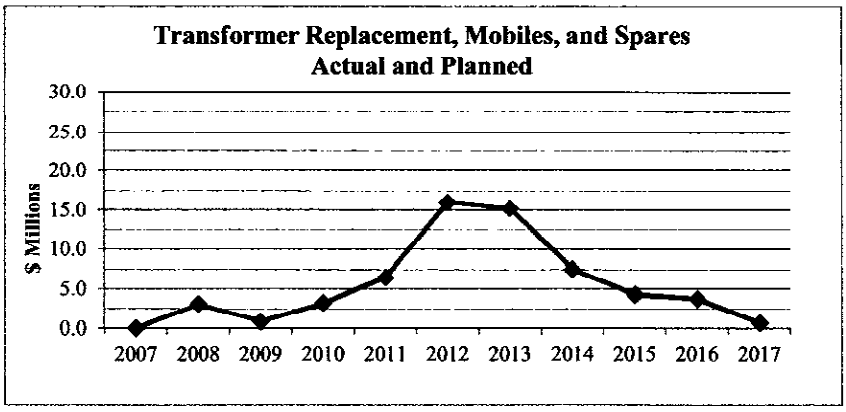
$ Millions	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Short-Term Sustaining	$30.0	$30.0	$30.0	$30.0	$30.0	$150.0
Grid Modernization	4.0	4.0	4.0	4.0	4.0	20.0
Metric Improvement	0	0	0	0	0	0
Long-Term Sustaining	6.0	6.0	6.0	6.0	6.0	30.0
Total	**$40.0**	**$40.0**	**$40.0**	**$40.0**	**$40.0**	**$200.0**

Short-Term Sustaining

Every utility must invest in non-discretionary capital projects each year in order to maintain reliable service. The graph below illustrates Delmarva's short-term sustaining capital additions through 2012 and its projected additions under its five year plan.



Deriving a reasonable estimate of short-term sustaining capital needs is not an exact science; there is normally some variability in capital additions due to the inherent lumpiness of capital projects. For example, the chart below illustrates Delmarva's capital additions for transformer replacements and the purchase of mobile and spare transformers.



We observed similar peaks in other types of sustaining capital spending over the recent past. For example, Delmarva spent $2 million under its tree wire initiative in 2008, but plans to invest at one-quarter that rate in the future. A substation spill prevention initiative begun in 2008 was completed by 2010, with no similar work required in the future.

Our trend analysis indicates requirements of roughly $30 million per year over the next five years. We believe that $30 million per year for sustaining capital project spending will allow Delmarva to meet its short-term reliability needs over the next five years while also providing a small cushion. In the event the full amount is not needed in a given year, the Company could either devote the excess to the two initiatives we support, grid modernization and long-term sustaining capital investment, or set it aside for contingencies such as the purchase of a large transformer.

Short-term sustaining capital projects are for the most part unavoidable investments, and in that sense should be relatively non-controversial from a ratemaking perspective. In the context of a multi-year rate scheme, the Commission might consider a program whereby this amount is added to rate base each year (after netting out retirements) in order to smooth the ratemaking impact and avoid the cost of rate cases.[29] Allowing the Company to recover for non-controversial capital additions in a timely fashion would help remove the financial pinch of funding capital additions in other areas.

Metric Improvement

Delmarva's five-year plan in this area consists of $87 million of feeder-related work beyond that required to meet the worst performing feeder remediation requirement in the Standards.[30] In Delmarva's new priority feeder initiative, the Company plans to invest an *additional* $4 million per year on its ten worst performing feeders, based on in-depth evaluations to identify further opportunities to improve performance on those circuits. The remaining approximately $60 million relates to Delmarva's feeder reliability improvement initiative. This program targets circuits other than the ten worst performing feeders that have a significant negative effect on system reliability indices.

Further capital additions in this category over the next five years would be inconsistent with the revised Standards we recommend, *i.e.*, a maximum SAIDI of 200 minutes and maximum SAIFI of 1.60. Delmarva is currently performing at a SAIDI of 146 minutes, much better than what we have defined as respectable performance. While these feeder projects are arguably worthwhile on some level, they cannot be justified given the higher priorities of grid modernization and replacement of aging infrastructure. As noted earlier, Delmarva can readily comply with the revised performance standards without any new capital investment specifically aimed at lowering SAIDI or SAIFI, particularly since the Company may see some corollary reduction in these indices from other capital initiatives.[31]

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[29] The Company in turn might agree not to initiate a rate case for the purposes of further rate base adjustments over a given time period. We suggest that sustaining capital projects be confirmed by Staff and other interested parties in an abbreviated review process.

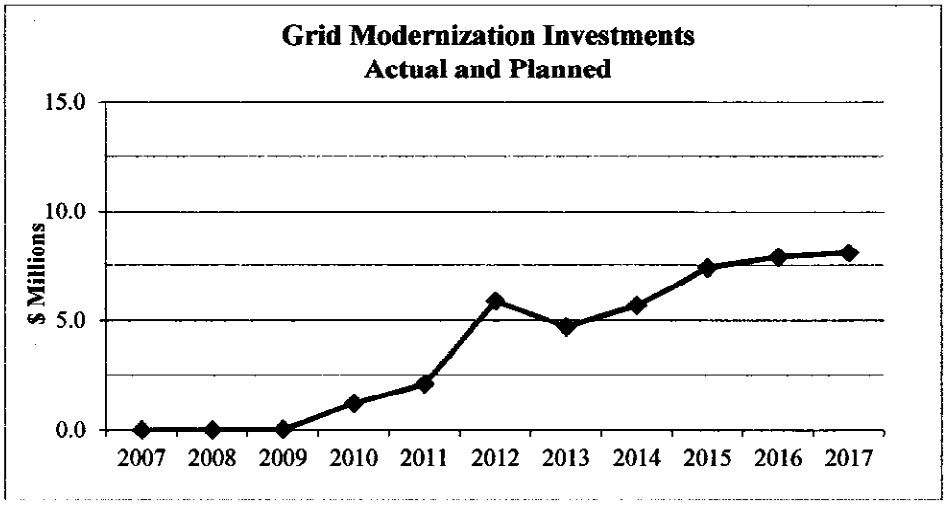
[30] We have included the cost of the required worst performing feeder program in sustaining capital.

[31] Feeder improvement projects to improve SAIDI and SAIFI can be reinstated rather quickly in the remote likelihood that compliance appeared questionable.

Obviously, the Commission cannot prevent Delmarva from continuing to spend on these programs. However, the framework established by the revised Standards, along with an order in this docket that clearly sets forth the Commission's view of priorities on behalf of ratepayers, means that certain investments would be difficult to later justify and recover in rates.

Grid Modernization

Delmarva's five year plan includes $34 million of grid modernization initiatives, primarily projects in the areas of distribution automation and further build-out of Supervisory Control and Data Acquisition (SCADA) capabilities. The Company began to significantly ramp up these efforts in 2011 under its REP.

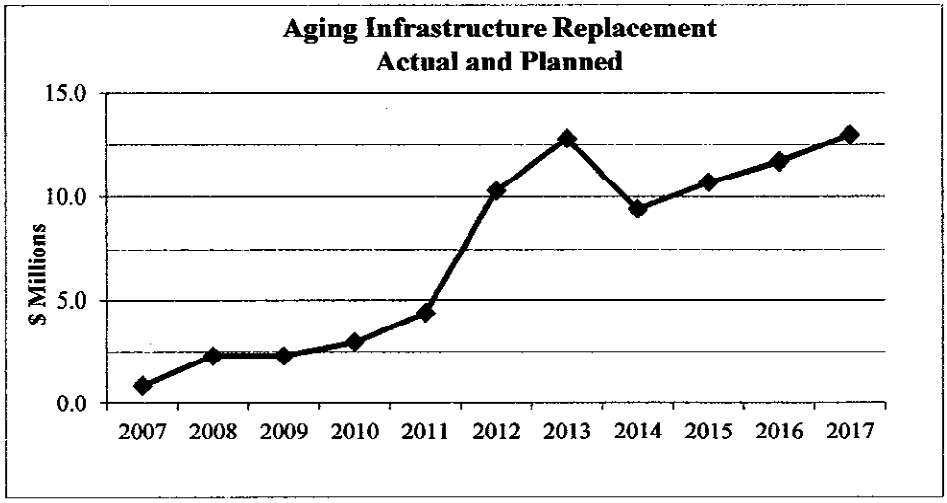


The two primary distribution automation initiatives in Delmarva's five year plan are the installation of automatic sectionalizing and restoration (ASR) schemes and the addition of recloser remote control capabilities. These technologies allow for automated fault isolation and restoration to reduce the number of customers impacted by feeder outages and to speed restoration of service to those customers impacted by a fault. This distribution automation is useful under blue sky or small outage conditions, but is generally not as effective during larger scale outage events. SCADA equipment improves the collection of operational data from the distribution system and provides remote control capabilities, which in turn aids a utility in locating or preventing outages and speeding restoration efforts.

The Commission has indicated its interest in pursuing grid modernization technologies that are ultimately beneficial to ratepayers, *e.g.*, AMI. Given that, some level of investment in this area over the next five years is appropriate. However, some of Delmarva's grid modernization projects appear less time-sensitive than others. For example, the Company's need to standardize or upgrade existing radio control capabilities is not particularly urgent. Silverpoint therefore recommends grid modernization at a slower pace than Delmarva proposes to mitigate the impact on customer rates. Based on our analysis of the Company's past spending as well as the nature of its proposed future projects, we believe that approximately $4 million per year over the next five years will be adequate. This amount is roughly half that of Delmarva's current plan and more consistent with historical spending patterns.

Silverpoint suggests that the parties work together as part of a collaborative process to prioritize the grid modernization projects. In its selection, Delmarva should consider emphasizing projects that would make the most of synergies with AMI already being implemented and paid for by ratepayers.

Long-Term Sustaining (Aging Infrastructure Replacement)
Aging infrastructure represents a threat to maintaining current levels of reliability over the mid- to longer term. Delmarva's five-year plan includes nearly $58 million of replacement initiatives, which it began to increase in 2011 under its REP.



The Company plans to double its pace of planned URD replacement, as well as its major initiatives at substations including switchgear, breaker, and bushing replacement and structural improvements. These projects tend to be more complex and have longer planning horizons than other types of investments.

Significant amounts of distribution utility assets in the industry are well beyond their depreciable lives, and utilities like Delmarva (and their customers) have thus far been able to benefit from the extended useful service from these assets. It is not realistic to think that any utility, including Delmarva, can put off indefinitely the need to significantly reinvest in its system. At some point a utility must rejuvenate, and the cost of the replacement of these assets in some cases is an order of magnitude greater than the original cost.

However, after reviewing the data and studies that the Company offered as justification for its infrastructure replacement program, we saw no support for the pace of Delmarva's planned investment for this initiative. While we agree that Delmarva needs to dedicate capital investments to maintain reliability over the longer term, the Company appears to be no worse off than the average utility in this regard. We appreciate the Company's renewed sense of urgency, but the system is not in imminent danger of catastrophic failure. Any aging infrastructure

replacement initiative must be managed in such a way as to remain respectful of ratepayers and the rates they ultimately pay for these infrastructure reinforcements.[32]

Silverpoint therefore recommends that the Commission authorize a more moderate pace of aging infrastructure replacement than the one Delmarva proposes to mitigate the impact on customers' rates. Based on our analysis of the Company's past spending as well as the nature of its proposed future projects, approximately $6 million per year over the next five years should be adequate. This amount is approximately half that of Delmarva's current plan, but still higher than in the recent past. We suggest the parties work in a collaborative process to prioritize the selection and order of these projects. Managing the infrastructure replacement process requires that the Company have an appropriate preventative maintenance program that measures key factors to determine the condition of each major asset, the risks, and the timing for replacement. Information from that program should be shared with stakeholders to inform the decision-making process.

In conclusion, Silverpoint found Delmarva's planned five-year reliability-related capital additions of $326.6 million to be excessive. We recognize the need for investment in projects designed to sustain current levels of reliability over the near term that total approximately $150 million. We do not, however, support the planned $87 million investment in metric improvement projects. And while we agree with the necessity of replacing aging infrastructure and in modernizing the grid over the long term, we found no support for Delmarva's pace of spending on those programs. We therefore propose an additional reduction of approximately $40 million in Grid Modernization and Long-Term Sustaining projects over the next five years. Silverpoint's recommended capital additions by category compared to those in the Delmarva plan are summarized in the table below.

Five Year Total Reliability-related Capital Additions by Category

$ Millions	**Delmarva**	**Silverpoint**	**Difference**
Short-term Sustaining	$148.3	$150.0	$(1.7)
Grid Modernization	33.8	20.0	13.8
Metric Improvement	86.9	0	86.9
Long-term Sustaining	57.6	30.0	27.6
Total	**$326.6**	**$200.0**	**$126.6**

Our recommended reductions of $126.6 million would save the typical residential ratepayer approximately 32% of the cost of Delmarva's original plan.

[32] The Company's position is in our view unsupported. In the two alternative scenarios it developed at Silverpoint's request (*i.e.*, maintaining a SAIDI of 175 or 200 compared to its current trajectory) the Company did not even consider the possibility of slowing down or spreading out its programs over more years. The Company's analyses supporting the need for replacement of metal clad switchgear and setting priorities for various facilities were not sufficiently compelling and were inconsistent with the results of its budgeting process.

Appendices

Appendix 1 Delmarva 2007-2017 Reliability-Related Plant Additions by Project Grouping

Project Name	Short Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Emergency Restoration Work												
RDLBEMG2	Emergency Restoration Blanket - Millsboro	1,475,661	247,105									
UDLBRM3M1	Emergency Restoration Blanket - Millsboro		1,657,497	2,276,450	2,752,585	2,181,352	2,143,782	2,485,026	2,528,043	2,528,043	2,528,043	2,528,043
RDLNEMG1	Emergency Restoration Blanket-Christiana	7,453,015	59,109	42,228	-200							
UDLNRM3C1	Emergency Restoration Blanket-Christiana	0	7,110,534	8,663,847	9,218,021	12,404,954	9,082,965	10,796,115	10,744,131	10,744,131	10,744,131	10,744,131
Projects Sponsored by Local District												
RDLBMS2	Millsboro -- Misc. Dist. Improve. Blanket	1,245,315	183,272	3,176								
UDLBRM4MA	Millsboro -- Misc. Dist. Improve. Blanket	0	532,150	1,140,134	1,423,116	869,427	511,114	612,596	666,666	666,666	666,666	666,666
RDLNMS1	CH- District Misc. Improvement Blanket	1,702,791	998,855	-16,035	-5,026							
UDLNRM4CA	Misc. Dist. Improve. Blanket - Christiana	0	217,870	1,499,821	1,400,097	932,286	1,443,005	899,690	900,000	900,000	900,000	900,000
UDLBRM4MM	Customer Reliability Improve. - Millsboro	0				408,039	587,345	205,216	228,128	231,332	237,116	243,044
UDLBRM4M	Customer Reliability Improvements-Bay	0	72,539	7,056	129,807	126,368						
UDLNRM4CM	Customer Reliability Improve. - Christiana	0	253,114	659,659	170,546	459,996	383,405	433,430	489,836	500,629	514,426	527,287
Underground Facilities												
UDLNRM4CR	Wilmington Network Upgrade (underground)	0	0	468,216	336,193	529,769	830,228	448,645	595,758	599,600	603,442	607,284
UDLBRM4MD	Millsboro - Planned URD Cable Replace.	0	907,533	960,316	1,361,058							
RDLBIR26	Millsboro - Planned URD Cable Replace.	572,045	45,949									
RDLNIR27	Christiana - Planned URD Cable Replace.	-4,542	0									
UDLBRM4MD	Millsboro - Planned URD Cable Replace.					2,004,031	3,148,970	1,776,909	1,775,000	1,775,000	1,775,000	1,775,000
UDLNRM4CD	Christiana - Planned URD Cable Replace.						891,918	1,617,641	1,612,148	1,612,148	1,612,148	1,612,148
UDLBRM4MU	MI - Replace URD Secondary Cables	0	672,837	1,208,637								
UDLBRM5MA	JR: Millsboro- URD Infrastructure Replace.	0	729,161	125,506								
RDLBUP60	Millsboro-Replace Deteriorated BD Cable	398,099	49,340									
RDLNUP121	Christiana - Replace Failed Cable (UG)	660,910	254,500	125,016	3,408	10,750						
RDLBUP68	Country Club Estates Cable Replacement	111,733	0									
UDLBRM4MC	Millsboro - Replace Deteriorated URD Cable	0	439,472	808,969	1,084,073							
UDLBRM4MC	Millsboro - Replace Deteriorated URD Cable					759,646	929,715	678,281	674,033	685,884	703,031	720,607
UDLNRM4CC	Christiana - Replace Deter. URD Cable					1,073,832	703,978	903,213	980,136	1,007,486	1,040,172	1,066,183

Project Name	Short Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
UDLBRM4MO	Millsboro: Pad mount Transformer Replace.							0	200,000	250,000	250,000	250,000
UDLNRM4CO	Christiana: Pad mount Transformer Replace.							0	200,000	250,000	250,000	250,000
Line/Feeder Programs												
RDLBUP122	Priority Circuit Improvements- Bay Reg.	329,366	157,479									
UDLBRM4F	Bay Reg.: Priority Circuit Improvements	0	366,235	706,600	219,136	192,921						
UDLBRM4K	Bay Reg.: Priority Feeder Rebuild	0	184,824	0	0							
RDLNUP199	Priority Circuit Improve.- Christiana	818,247	5,943									
UDLBRM4MF	Millsboro - Priority Circuit Improvement					1,361,055	795,059	2,501,875	2,500,000	2,500,000	2,500,000	2,562,500
UDLNRM4CF	Christiana - Priority Circuit Improvement					1,334,564	5,037,261	2,538,288	2,508,191	2,574,711	2,523,813	2,586,906
UDLNRM4CK	Priority Feeder Rebuild: Christiana					209,958	0					
UDLBRM4RC	Bishop Substation - Lines Upgrades DE							142,156	0	0	0	0
UDLNRM5SD	Re-conductor DE0217 (distribution lines)							568,372	0	0	0	0
UDLBRM21N	Bay Reg.: Misc. Reliability Improvements	0	1,016	191,582	728,952	45,377						
UDLBRM2M2	Bay MI – Misc. Reliability Improve.					5,074	35,907					
UDLNRM21N	NC Reg.: Misc. Reliability Improvements	0	0	76,060	1,083,024	608,358	-8,651					
UDLBRM4MQ	Millsboro: Upgrades for Multi Device Operations							452,135	500,000	500,000	500,000	500,000
UDLNRM4CQ	Christiana: Upgrades for Multi Device Ops.							502,574	500,000	500,000	500,000	500,000
UDLBRM63M	Millsboro: Feeder Reliability Improvement					627,540	2,647,888	4,324,609	4,904,270	5,951,874	6,000,674	6,150,691
UDLNRM63C	Christiana Feeder Reliability Improvements					840,003	2,182,214	6,057,151	5,969,178	7,074,056	7,167,788	7,346,982
UDLBRM4ZM	AMI Dist. Line Work Bay Reg. (Millsboro)							9,934	0	0	0	0
UDLBRM5ND	NERC Line Upgrades: Dist. Lines Bay DE							235,309	100,000	0	0	0
UDLNRM5ND	NERC Line Upgrades: Dist. Lines NC DE							226,509	50,000	0	0	0
UDLNRM5SC	Christiana Sub: Replace Duct Bank						201,865	1,502,344	0	0	0	0
UDLBRM4MJ	Millsboro District - Recloser Replacement	0	166,893	266,769	43,932	92,623	707,907	376,971	150,000	150,000	150,000	153,750
UDSNRD8SA	Churchmans Recloser Removal	0	0		77,410			46,220	0	0	0	0
UDLNRM4CJ	Christiana Distr- Replace Line Reclosers	0	0	103,436	50,169		95,152	505,863	500,264	501,565	500,746	513,265
UDLNRM8SH	Churchmans - Replace Reclosers							20,225	0	0	0	0
UDLNRM8SG	Brandywine River Crossing Cable Install.	0	0		247,714	365,363	-11,417					
UDLNRM9SB	CH District Replace Steel Poles - 4th St. Wilmington	0	0	160,515	269,450	188,010	163,620	546,987	600,182	0	0	0

Project Name	Short Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
UDLNRM4CV	CH - Install Rubber-Covered Second. Wire	0	173,495	147,794	184,133							
UDLNRM5SD	R/C Circuit DE217	0	0				10,231					
UDLBRM4MW	MI - Install Tree Wire/Spacer Cable	0	0				6,501					
UDLNRM4CU	Install Tree Wire/Spacer Cable - Christiana	0	513,086	1,767,414	14,508			0	492,564	492,389	492,367	504,676
UDLBRM4MH	Avian Protection Improvement Millsboro							30,022	33,333	33,332	34,166	35,020
UDLNRM4CH	Avian Protection: Christiana							46,999	50,929	50,554	51,370	52,653
UDLBOSV5DE	Bay DE: Salvage Scrap Wire/Cable	0	0				-361,108					
UDLNMS5D	NC DE: Removal & Salvage Capital Equip.	0	0				-1,661	-17,640	-25,000	-25,000	-25,000	-25,000
UDLNOSV5D	NC DE: Salvage Scrap Wire/Cable	0	0				-145,702	-17,640	-25,000	-25,000	-25,000	-25,000
Pole Replacement/Poletop Transformers												
UDLBRM4E	Bay Reg: Deteriorated / Reject Pole Replace.	0	73,692	180,586	201,497	48,133	145					
RDLBMS6	Bay Region: Reject Pole Replacement	136,663	42,487									
UDLBRM4ME	Millsboro - Distribution Pole Replace.	0				29,247	88,968	35,488	40,001	40,001	42,231	43,287
UDLNRM4CE	Christiana District-Distrib. Pole Repl.\Reinf.	0				1,285,897	417,566	330,572	364,228	368,923	373,849	383,195
UDLNMS3D	Distribution Transformer Retire DE (poletop)							132,992	155,481	203,840	248,560	254,592
Automation - Substation (S), Lines (L), and Other (O)												
UDSBRD8M	Upgrade SCADA/RTU Capability	0	0	30,383	0	0	0	42,072	44,952	45,892	46,831	47,771
UDSNRDA1	UF NC Region: Distribution Automation	0	0		726,151	0	0					
UDLNRDA1	UF Distr. Automation New Castle Reg.	0	0		456,864	0	0					
UDSNRDA1C	Distribution Automation: Christiana Subs.					154,396	3,363,047	823,380	508,173	892,914	1,239,378	1,274,485
UDSNRD8MD	Scada/RTU Upgrade NC DE Dist. Sub					0	57,605	304,054	300,864	128,453	129,046	129,640
UDSBRDA1D	Substation Distribution Automation Bay DE					200,647	924,674	17,795	403,227	412,576	422,065	431,700
UDLNRDA1C	Distribution Automation: Christiana District					0	184,726	1,508,748	504,005	996,791	1,501,367	1,529,804
UDLBRDA1D	Distribution Automation - Bay DE					1,063,871	397,950	0	500,000	1,000,000	500,000	512,500
UOIBRASRD	UF Install ASR Computer					2,555	121,397	7,843	45,078	46,119	47,176	48,251
UOINRASRD	UF Install ASR Computer					79,502	167,057	223,264	197,288	199,900	202,511	205,121
UORNOBR1C	CH Comm. Work - Collector to Data Network					196,004	286,224	313,987	341,306	381,498	407,664	416,970
UORNODA1C	Christiana Comm. Work-Install Radios Line Equip.					46,907	173,459	437,553	451,194	461,785	476,166	487,928
UORNORBSC	BBW Base Station - Install Christiana					101,423	32,669	314,066	335,351	386,698	394,144	415,930

Project Name	Short Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
UORNORBTC	Christiana Comm Work: Upgrade Radios							0	0	150,000	150,000	153,750
UORNORSSC	Christiana - Sub Subscriber - BBW					0	114,852	330,325	351,677	379,708	386,090	407,729
UORNORCPC	Install Radio Control for Cap Cntrl-Christiana							0	325,410	325,340	325,637	333,851
UORBORBTM	Millsboro Comm. Work – Upgrade Radios in Line Equip.							0	0	150,000	150,000	153,750
UORBORCPM	Millsboro: Install Radio Control for Cap Control							19,270	337,820	344,956	356,990	365,934
UORBORSSM	Millsboro Sub Subscriber - BBW							145,735	162,463	167,056	168,478	169,900
UORBOBR1M	MI Comm .Work-Collector to Data Network					88,494	64,175	0	387,341	397,678	419,684	437,061
UORBODA1M	Millsboro Comm. Work - Install Radios Line Equip.					57,591	-12,552	0	317,369	397,445	401,898	411,131
UORBORBSM	BBW Base Station - Install Millsboro					62,419	14,964	168,270	177,380	183,681	187,250	190,909
Substation Work												
RDSBEMG1	Bay Distribution Sub. Emerg. (Formerly RDSBIR4)	103,629	0	0	0	0	0					
UDSBRD71	Bay Dist. Substation Emergency Replace.	0	13,626	48,260	179,278							
UDSBRD71D	Bay Dist. Sub. Emergency - DE	0				203,191	128,279	136,860	144,970	147,994	151,123	151,653
RDSNEMG1	New Castle Sub Emergency (formerly RDSNIR4)	91,340	701,662	36,330	-26,145							
UDSNRD71	New Castle Substation Emergency	0	41,363	92,110	110,772	-14,997	32,390					
UDSNRD71D	NC DE: Dist. Sub. Emergency	0				66,050	137,232	235,656	256,081	259,307	262,535	265,763
RDSBIR26	Bay Dist. Substation Bushing Replacements	27,268	0	0	0	0	0					
UDSBRD8F	Bay Dist. Substation Bushing Replacements	0	5,195	0	5,014							
UDSBRD8FD	Bay Dist. Substation Bushing Replacements	0		0			44,978	102,445	74,334	74,927	75,521	76,115
UDSNRD8F	New Castle Dist. Sub Bushing Replacement	0	0	0	27,915	27,979	267,506					
UDSNRD8FD	NC DE Dist. Sub Bushing Replace.				5,533	138,781		122,066	128,106	139,376	140,091	144,018
UDSBRD9D	IR: Bay Substation Replace Deteriorated Dist. Breakers	0	0	0	6,838	0	215,830					
UDSNRD9D	IR: New Castle Dist. Sub Breaker Replace.	0	0	116,827	328,704	448,855						
UDSBRD9DD	Replace Deteriorated Dist. Breakers DE	0	0	0		144,520	802,679	584,086	632,057	642,607	1,306,321	1,327,424
UDSNRD9SE	IR: Edgemoor 12kv Sub Upgrade 12kv Bkrs.						201,553	207,818	0	0	0	0
UDSNRD9DD	IR: NC DE Breaker Repl. Dist. Sub.	0	0			522,873	713,041	1,399,999	1,385,949	1,399,530	1,131,775	1,142,586
UDSNRD9FD	IR: NC DE Replace/Upgrade PTs Dist. Subs	0	0			78,888	38,839	69,201	78,098	79,165	80,235	82,269
UDSNRD9HD	IR: New Castle Sub. Replace. PCB Caps	0	0				322,588	287,450	0	0	0	0
UDSNRD9SDD	NC DE - Add Sub Condition Monitoring Points	0	0			100,154	62,358					

Project Name	Short Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
UDSBRD8ED	Bay Dist. Sub Battery & Charger Replace	0					89,315	66,777	74,268	76,629	79,001	81,383
UDSBRD8E	Bay Dist. Sub Battery and Charger Replace.	0	420	19,228	18,568							
UDSNRD8ED	NC DE: Dist. Sub Battery/ Charger Replace.	0				65,226	81,917					
UDSNRD8E/ED	New Castle Dist. Sub Battery & Charger Replacement	0	66,570	58,561	70,625	9,085		103,071	107,927	108,835	109,743	110,650
UDSNRD9ZD	IR: NC DE Repl. Deter Switches Dist. Sub							72,789	87,404	99,276	100,282	101,287
UDSBRD8A	Bay Dist. Sub Planned Improvements	0	0	0	-2,491							
UDSBRD8AD	Bay Dist. Sub Planned Improvements DE	0	0	0			92,675	35,248	36,151	36,853	37,554	38,255
RDSNIR3	Substation Planned Improve. - New Castle	65,428	62,624	-657	0							
UDSNRD8A	Substation Planned Improve. - New Castle	0	0	3,806	6,771	7,094						
UDSNRD8AD	Substation Planned Improve. - New Castle DE	0	0				75,304	98,046	106,895	71,406	72,382	73,357
UDSNRM61D	NC - DE Sub Comprehensive Reliability Improvements						1,982,713	547,708	250,000	250,000	250,000	250,000
UDSBRM61D	Bay - DE Sub Comprehensive Reliability Improvements							0	0	859,433	870,930	990,779
UDLNRM5BA	IR: Rogers Road Sub: Convert 4kv to 12kv	0	16,979	60,202	755,484	404,497	533,591	3,947	0	0	0	0
RDLNIR14	N. Wilmington Sub: Convert 4kV to 12kV	114,816	0									
RDLNUP56	Tenth Street Sub: Convert 4kV to 12kV	-455	0	390,993	1,672							
RDLNUP262	Christiana Dist.-Old Kennett & Cntr Mtg, 4/12 Conversion	112,935	802,845									
UDLNRM8BA	N. Wilmington Sub: Convert 4kv to 12kv	0	458,693	918	37							
UDLBRM8BA	Greenwood: 4-25kV Conversion							745,726				
UDLBRM8BB	Wyoming-Convert to 25kV Cir 2233 (Phase II)							695,797				
UDSNRD9SF	IR: NC Replace. Deter Switches Dist. Sub.				107,986							
UDLNRM5SE	Cable Replacement for New Switchgear	0	0				77,669	480,339	506,532	509,284	512,036	514,786
UDSNRD8K	NC Reg.: 15kv Switchgear Improvements	0	0	260,958	10,666	27,148						
UDSNRD8KD	DPL DE - Switchgear replacements							0	0	0	0	2,999,768
UDSNRD9KA	Milford Crossroads Sub - Switchgear replacements							1,818,832				
UDSNRD9KB	Bear Sub - Switchgear replacements							1,699,116				
UDSNRD9KC	Naamans Sub - Switchgear replacements							0	1,371,929	0	0	0
UDSNRD9KD	Mermaid Sub - Switchgear replacements							0	795,874	0	0	0
UDSNRD9KE	West Wilmington Sub - Switchgear replacements							0	0	1,559,804	0	0
UDSNRD9KF	Churchmans Sub - Switchgear replacements							0	0	988,470	0	0
UDSNRD9KG	Milltown Sub - Switchgear replacements							0	0	0	1,369,327	0
UDSNRD9KH	Sunset Lake Sub - Switchgear replacements							0	0	0	1,729,401	0

Project Name	Short Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
UDSNRD9KI	Tallyville Sub - Switchgear replacements							0	0	0	0	1,301,370
UDSBRD8ID	Bay DE: Roof Replacement	0	0		0		148,223	406,368	68,148	68,385	68,415	68,653
UDSNRD9Y	IR: NC Repl Deter Structures Dist. Subs				107,986							
UDSBRD8VD	NERC Physical Security Bay DE Dist. Subs	0	0	0			49,009	165,567	166,466	169,849	173,335	176,822
UDSNRD8VD	NERC Physical Security: NC DE	0	0				241,878	784,419	890,424	306,583	307,579	318,825
UDLNRM5BC	Edgemoor - GM: Rebuild Dist. Underbuild	0				1,276	416,041					
UDLNRM8SE	Christiana Distr.-Rebuild OH Rear Lot Dist. Sys.	0	0	13,625	3,150			341,196	400,179	1,000,000	1,000,000	1,000,000
UDSBRD8P/PD	Bay Reg.; Misc. Dist. Sub Equipment Retirement	0	0	-3,826				10,532	10,500	10,500	10,500	10,500
UDLBMS5D	Bay DE: Removal & Salvage of Capital Equip.	0	0				11,735	-17,640	-25,000	-25,000	-25,000	-25,000
UDLBOSV5D	Bay DE: Salvage Scrap Wire/Cable	0	0				-76,007	-17,640	-25,000	-25,000	-25,000	-25,000
RDSNIR18	New Castle Sub Misc. Equipment Retirement-Dist.	69,135	30,724	0	0							
UDSNRD8P/PD	NC Reg.: Misc. Dist. Sub Equipment Retirement	0	-7,236	-3,932	-973			24,515	26,769	26,999	27,228	27,459
UDSNRD8PD	IR: NC DE Dist. Sub Misc. Equip Retire				6,642	39,562	4,556					
UDSNRD8RB	Old Kennett Road Sub. - Cleanup and Retire	0	0	36,450	-3,793							
UDSNRD8RC	Tenth Street Substation - Cleanup and Retire	0	0	11,938	3,872			136,479	0	0	0	0
UDSNRD8RD	Center Meeting Sub. - Cleanup and Retire	0	0	23,737	-3,793							
UDSNRD9RB	Madison St. Sub: Retire and Clean-Up	0	0			84,836						
RDSNIR6	Old Christiana Sub: Retire (69kV)	35,951	0									
UDSBRD8RB	Greenwood Substation-Retire/Remove 4kV							127,281	1,429	0	0	0
UDSBRD8RG	Wyoming-Retire Substation							80,129	0	0	0	0
UDSNRD8RA	North Wilmington Substation - Cleanup and Retire.							0	298,275	0	0	0
UDSNRD9A	IR: Rogers Road Substation - Cleanup and Retire.							0	285,054	0	0	0
RDSBUP165	Bay Reg. - Substation spill prevention Plans	22,195	-18,335	-3,860	0	0	0					
UDSBRD8Q	Bay Reg.: SPCC Plans - Add Sub. Containment	0	214,623	403,254	288,413	11,894	36,527					
UDSBRD8Q1	Bay Reg. SPCC Compliance: Bkr Repl – Dist.	0	0	234,778	0	0						
RDSNUP121	New Castle Reg. - Substation SPCC Plans	158,387	376,770	10,642	-43,074							
UDSNRD8Q	New Castle Reg.: SPCC Plans Install Sub. Containment	0	981,462	981,462	1,004,744	236,994	25,780					
UDSNRD8Q1	NC Reg. SPCC Compliance: Breaker Replace. – Dist.	0	614,290	614,290	664,655	15,263						

Project Name	Short Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Substation Transformer Replacement												
UDLBRCP2	Ches-Ply Lines - work for T1 Replace.	0	0	0	0		113,846					
UDSBRD9SO	Sussex Sub: Replace T1 Transformer	0	0	0		0	137,377					
UDSBRD8SO	Sussex Sub: Replace failed T1 Transformer	0	0	0			24,002					
UDSNRD9G	Milford Crossroads T1 Transformer				134,794	502,276						
UDSNRD8SB	Milford Crossroads: Replace T1 Transformer	0	0	280,162		90						
UDLNRMT1	Milltown: Move Circuit 640 from T1 to T3 (lines)							185,823	0	0	-	-
UDSNRMT2	Milltown: Retire T1- Relocate Ckt 640 to T3							91,185	0	0	-	-
UDSNRD8SI	Chapel St: Retire T1- Resupply Station Serv.							88,077	0	0	-	-
UDSBRD9SF	IR: Millsboro Sub - T1 Replacement							1,466,838	5,274	0	-	-
UDSBRD9SG	IR: Nr Seaford Sub - T1 & T2 Replacement							282,050	1,708,489	207,308	-	-
UDSNRD9SH	Brookside - Replace T2 34/12kv Transformer	0	0				1,160,584	2,080,135	0	0	0	0
UDSNRD9SJ	Milford Crossroads - Replace T2	0	0				359,637	389,773	0	0	0	0
UDSNRD8SC	Bear Sub: Replace Failed T-3 Unit				408,489	715,543	730,598					
UDSNRD8SD	Christiana Sub: Replace 138/12kv T2 Unit	0	0			417,853						
UDSNRD8SE	Silverbrook Sub: Replace Failed T3	0	0			2,039,218	823,079	264,849	0	0	0	0
UDSBRD9SX1	IR: Sussex - T2 Replacement							339,529	1,115,244	4,780	0	0
UDSNRD9SM	Replace Kiamensi 138-34 KV T2 Transformer							292,515	1,225,194	0	0	0
UDSNRD9SN	Replace Talleyville T2 transformer							0	282,775	747,552	0	0
UDSNRD8DA	Brookside - DPU Replacements	0	107,046									
UDSNRD8DB	New Castle - DPU Replacements	0	1,954	244,141								
UDSNRD8DC	West Wilmington - DPU & ITE51Y Replacements	0	99,311	26,942								
UDSNRD8DD	Churchmans & Milltown DPU replacements	0	159,626	47,501								
UDSBRD8DD	DPU Relay Replacement: Laurel Feeder 506							160,406	4,921	0	0	0
UDSBRD8BD	Dist Miscellaneous Relay Blanket - Bay DE	0	0	0	0		12,543	47,406	53,713	54,864	56,105	57,257
RDSNIR5	Distribution Misc. Relay Blanket	38,347	0	0	0							
UDSNRD8B/BD	Distribution Misc. Relay Blanket	0	99,038	29,206	48,623			61,414	67,789	68,906	70,026	71,144
UDSNRD9SG	Montchanin Sub Install new 34.5-12kV Transformer	0	0			1,669,736	2,550,811					
UDLNRM9SC	Montchanin Sub: Relocate 34kV and 12kV Circuits	0	0			82,616	601,797					
UDLNRM8SA	Edgemoor: Transfer 12kV ckts to 138/12kV T6 trans	0	495,340	43,184								

Project Name	Short Description	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
UDLNRM8SB	Edgemoor: Transfer 12kV to new 69/12kV T7 transformer	0	943,865									
UDSBRD9GD	Replace Aging Dist. Transformers DE (substations)							0	0	0	0	27,089
UDSNRD9G1	Replace Aging Dist. Transformers DE							0	0	1,824,325	2,154,028	534,768
UDSNRD9SK	West T5: Replace 69/34 kV Transformer							1,079,066	0	0	0	0
UDSNRD9SL	Replace West T2 69-34 KV Transformer							287,831	979,692	0	0	0
Spare/Mobile Substation Transformers												
UDSBRD8G	Bay Distribution - Spare Transformers	0	1,175,958	189,794	758,462	19,430		1,160,295	468,356	0	0	0
UDSNRD8G	New Castle - Spare Transformers	0	2,056	4,307	1,872,198	753,673	2,057,635	1,125,160	1,573,882	1,369,132	1,477,790	0
UDSNRD8GD	New Castle - Spare Transformers / T2 upgrade	0	0			153,916	1,731,516	124303	0	0	0	0
UDSBRD8G1	BAY - PHI Mobile Transformers					54,925						
UDSBRD8SC	Bay Region: Purchase Mobile Unit Trailer/Cables	0	0	0	1,281	88,750	236,166					
UDSNRD8G1	New Castle - Purchase 138/69-12kv Mobile Transformer	0	0				353,024	3,790,302	64,759	0	0	0
UDSBRD8G2	Bay Region 69/25x12 40MVA Mobile Unit							918,806	0	0	0	0
UDSBRD8G3	Bay Region Purchase Mobile Transformer							4,704	0	0	0	0
UDSBRD8G4	Bay Reg. Purchase 138x69kV/25kV 30MVA Mobile							966,027	1,209	0	0	0
Unidentified Category - assumed transformer related												
UDLNRACRD	NC-DE - Accrual for Reliability	0	0				2,990,371	996	1,000	1,000	1,000	1,000
UDLBRACRD	BAY-DE - Accrual for Reliability	0	0				2,135,979	1,068	1,000	1,000	1,000	1,000
	TOTAL Reliability Related	15,738,278	23,562,456	25,875,467	29,035,523	40,165,578	61,185,585	73,374,179	62,340,513	63,204,733	64,347,377	63,448,003

Actual data from AG-REL-3 Attachment B Capital Additions (2007-2012 non-REP) and AG-REL-3 Attachment A (2011-12 REP). Budget data from AG-REL-2 (non-REP 2013-17 Budget) and AG-GEN-1 Attachment D (REP 2013-17 Budget)

Appendix 2 Delmarva Reliability-Related Project Capital Additions by Category

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Short-term Sustaining											
Emergency Restoration Work	8,928,676	9,074,245	10,982,525	11,970,406	14,586,306	11,226,747	13,281,141	13,272,174	13,272,174	13,272,174	13,272,174
Substation Emergency Work	194,969	756,651	176,701	263,905	254,244	297,901	372,516	401,051	407,301	413,658	417,416
Projects Sponsored by District/Customer	2,948,106	2,257,800	3,293,811	3,118,540	2,796,116	2,924,870	2,150,932	2,284,630	2,298,627	2,318,208	2,336,997
Replace Deteriorated URD and Pad Mounts	1,170,742	2,145,310	2,268,128	1,087,481	1,844,228	1,633,693	1,581,494	2,054,169	2,193,370	2,243,203	2,286,790
Required Priority Circuit work (1)	1,147,613	714,481	706,600	219,136	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Line work (NERC, Reclosers, Tree/avian, Steel Poles, etc.)	0	853,474	2,445,928	887,316	645,996	665,388	3,512,103	1,927,272	1,177,840	1,178,649	1,209,364
Pole Replacement/Pole Top Transformers	136,663	116,179	180,586	201,497	1,363,277	506,679	499,052	559,710	612,764	664,640	681,074
Substation Transformer Replacement; Spares/Mobiles (2)	38,347	3,084,193	865,237	3,223,847	6,498,026	16,018,965	15,208,557	7,553,297	4,278,867	3,759,949	692,258
Substation Equipment Cleanup/Retire; Spill Prevention	285,668	2,192,298	2,304,934	1,916,693	388,549	2,591	343,656	572,027	-12,501	-12,272	-12,041
Substation Security/Under-build/Lot	0	0	13,625	111,136	1,276	855,153	1,697,550	1,525,217	1,544,817	1,549,329	1,564,300
Substation Battery/Charger Replacements	0	66,990	77,789	89,194	74,311	171,232	169,848	182,195	185,464	188,744	192,033
	14,850,783	**21,261,621**	**23,315,864**	**23,089,152**	**29,452,330**	**35,303,219**	**39,816,849**	**31,331,742**	**26,958,723**	**26,576,282**	**23,640,364**
Reliability Metric Improvement											
Supplemental Work on Priority Feeders (1)	0	0	0	0	2,098,498	4,832,320	4,040,163	4,008,191	4,074,711	4,023,813	4,149,406
Feeder Reliability Improvement (priority circuits/upgrades)	0	1,016	267,642	1,811,976	2,126,352	4,857,358	12,046,997	11,873,448	14,025,930	14,168,462	14,497,673
	0	**1,016**	**267,642**	**1,811,976**	**4,224,850**	**9,689,678**	**16,087,160**	**15,881,639**	**18,100,641**	**18,192,275**	**18,647,079**
Grid Modernization											
Automation - Substation, Lines, and Other	**0**	**0**	**30,383**	**1,183,015**	**2,053,809**	**5,890,247**	**4,656,362**	**5,690,898**	**7,448,490**	**7,912,375**	**8,124,115**
Long-term Sustaining (Aging Infrastructure Replacement)											
Planned URD Replacement	567,503	953,482	1,428,532	1,697,251	2,533,800	4,871,116	3,843,195	3,982,906	3,986,748	3,990,590	3,994,432
Switchgear Replacement	0	0	260,958	118,652	27,148	77,669	3,998,287	2,674,335	3,057,558	3,610,764	4,815,924
Substation Conversions	227,296	1,278,517	452,113	757,193	404,497	533,591	1,445,470	0	0	0	0
Substation Improvements	65,428	62,624	3,149	4,281	7,094	2,150,692	681,002	393,046	1,217,692	1,230,866	1,352,391
Sub. Breaker/Bushing/Switch Replace.	27,268	5,195	116,827	374,004	1,462,050	2,669,374	2,845,854	2,385,948	2,434,881	2,834,225	2,873,699
	887,495	**2,299,819**	**2,261,579**	**2,951,381**	**4,434,589**	**10,302,441**	**12,813,808**	**9,436,235**	**10,696,879**	**11,666,445**	**13,036,445**
	15,738,278	**23,562,456**	**25,875,467**	**29,035,523**	**40,165,578**	**61,185,585**	**73,374,179**	**62,340,513**	**63,204,733**	**64,347,377**	**63,448,003**

(1) assumes approximately $1 million of priority feeder work is required by standards 2013 onward, rest discretionary (2) includes $4 million accrual in 2012